Land Use and Environmental Service Agency
(Code Enforcement)

NC Mechanical Code

1st Qtr. 2016 Code Answers in brown (Jan-Mar) 2nd Qtr. 2016 Code Answers in green (Apr- Jun)
3rd Quarter 2016 Code Answers in blue (Jul-Sep) 4th Quarter 2016 Code Answers in red (Oct-Dec)

Table of Contents

100 Chapter 1 Administration

200 Chapter 2 Definitions

300 Chapter 3 General Regulations

306.3 - **Question:** I am installing an appliance in the attic. If I install it adjacent to the opening, where it can be serviced standing on the pull down or a portable ladder, will that be code compliant?

Answer: Yes, Section 306.3 Exception #1 states the passageway and service space are not required where the appliance can be serviced and removed through the opening.

Since this exception is under the section for appliances installed in attics, the intent is to access them via ladder (permanent or portable).

306.3 Appliances in attics. Attics containing appliances shall be provided with an opening and unobstructed passageway large enough to allow removal of the

NC Mechanical Code

1st Qtr. 2016 Code Answers in brown (Jan-Mar) 2nd Qtr. 2016 Code Answers in green (Apr- Jun)
3rd Quarter 2016 Code Answers in blue (Jul-Sep) 4th Quarter 2016 Code Answers in red (Oct-Dec)

largest appliance. The passageway shall not be less than 30 inches (762 mm) high and 22 inches (559 mm) wide and not more than 20 feet (6096 mm) in length measured along the centerline of the passageway from the opening to the appliance. The passageway shall have continuous solid flooring not less than 24 inches (610 mm) wide. A level service space not less than 30 inches (762 mm) deep and 30 inches (762 mm) wide shall be present at the front or service side of the appliance. The clear access opening dimensions shall be a minimum of 20 inches by 30 inches (508 mm by 762 mm), and large enough to allow removal of the largest appliance.

Exceptions:

1. The passageway and level service space are not required where the appliance is capable of being serviced and removed through the required opening.

2. Where the passageway is not less than 6 feet (1829 mm) high for its entire length, the passageway shall not be limited in length.

307.2.3.1 - Question: I was turned down for not having water level switch on a RTU. Where is this in the code?

Answer: Section 307.2.3.1 NCMC requires water level monitoring devices on downflow units and all other coils that do not have a secondary drain. RTUs only have the one drain, there is not secondary drain. This section requires a water level monitoring device to be installed inside the primary drain pan.
307.2.3.1 Water-level monitoring devices. On downflow units and all other coils that do not have a secondary drain or provisions to install a secondary or auxiliary drain pan, a water-level monitoring device shall be installed inside the primary drain pan. This device shall shut off the equipment served in the event that the primary

drain becomes restricted. Devices installed in the

drain line shall not be permitted.

NC Mechanical Code

1st Qtr. 2016 Code Answers in brown (Jan-Mar) 2nd Qtr. 2016 Code Answers in green (Apr- Jun)
3rd Quarter 2016 Code Answers in blue (Jul-Sep) 4th Quarter 2016 Code Answers in red (Oct-Dec)

307.2.3 - Question: If I install an 80% furnace with A/C coil in the attic, is the pan required to be under the furnace and the coil or just the coil?

Answer: The pan is only required under coils on which condensate will occur.

307.2.3 - Question: I am installing an airhandler above a lay in ceiling. There is not much room, am I required to install a secondary pan? Are there other options?

Answer: A secondary pan is not required if you utilize one of the other options in section 307.2.3 NCMC.

307.2.3 Auxiliary and secondary drain systems. In addition to the requirements of Section 307.2.1, where damage to any building components could occur as a result of overflow from the equipment primary condensate removal system, one of the following auxiliary protection methods shall be provided for each cooling coil or fuel-fired appliance that produces condensate:

1. An auxiliary drain pan with a separate drain shall be provided under the coils on which condensation will occur. The auxiliary pan drain shall discharge to a conspicuous point of disposal to alert occupants in the event of a stoppage of the primary drain. The pan shall have a minimum depth of 11/2 inches (38 mm), shall not be less than 3 inches (76 mm) larger than the unit or the coil dimensions in width and length and shall be constructed of corrosion-resistant material. Galvanized sheet steel pans shall have a minimum thickness of not less than 0.0236 inch (0.6010 mm) (No. 24 gage). Nonmetallic pans shall have a minimum thickness of not less than 0.0625 inch (1.6 mm).

2. A separate overflow drain line shall be connected to the drain pan provided with the equipment. Such overflow drain shall discharge to a conspicuous point of disposal to alert occupants in the event of a stoppage of the primary drain. The overflow drain line shall connect to the drain pan at a higher level than the primary drain connection.

NC Mechanical Code

1st Qtr. 2016 Code Answers in brown (Jan-Mar) 2nd Qtr. 2016 Code Answers in green (Apr- Jun)
3rd Quarter 2016 Code Answers in blue (Jul-Sep) 4th Quarter 2016 Code Answers in red (Oct-Dec)

3. An auxiliary drain pan without a separate drain line shall be provided under the coils on which condensate will occur. Such pan shall be equipped with a water-level detection device conforming to UL 508 that will shut off the equipment served prior to overflow of the pan. The auxiliary drain pan shall be constructed in accordance with Item 1 of this section.

4. A water-level detection device conforming to UL 508 shall be provided that will shut off the equipment served in the event that the primary drain is blocked. The device shall be installed in the primary drain line, upstream of the primary drain line trap, the overflow drain line, or in the equipment-supplied drain pan, located at a point higher than the primary drain line connection and below the overflow rim of such pan.

400 Chapter 4 Ventilation

500 Chapter 5 Exhaust Systems

504.5 - Question: What defines a closet when determining if make up air is required for a clothes dryer?

Answer: Section 504.5 requires makeup air to be provided for closests that are designed for the installation of clothes dryers. The minimum habitable room allowed by the building code is 70 sq ft, if the room is less than 70 sq ft it would be considered a closet and makeup air would need to be provided.

504.5 Makeup air. Where a closet is designed for the installation of a clothes dryer, an opening having an area of not less than 100 square inches (0.0645 m2) shall be provided in the closet enclosure or makeup air shall be provided by other approved means.

507.2.3 - Question: Are there any hood requirements for a domestic range installed in a breakroom?

NC Mechanical Code

1st Qtr. 2016 Code Answers in brown (Jan-Mar) 2nd Qtr. 2016 Code Answers in green (Apr- Jun)
3rd Quarter 2016 Code Answers in blue (Jul-Sep) 4th Quarter 2016 Code Answers in red (Oct-Dec)

Answer: The code allows up to 2 domestic ranges installed in dwelling units, churches, schools, day care centers, break areas and similar installations.
The code exempts these areas because of their frequency of use, duration and the nature of the cooking. A breakroom will not have the same use as catering kitchen. The code does not specify the fuel source for the domestic ranges, gas or electric.
507.2.3 Domestic cooking appliances used for commercial purposes. Domestic cooking appliances utilized for commercial purposes shall be provided with Type I or Type II hoods as required for the type of appliances and processes in accordance with Sections 507.2, 507.2.1 and 507.2.2.

Exception: A maximum of two domestic ranges installed in dwelling units, churches, schools, day care centers, break areas and similar installations.

507.2.1.1 - Question: Are Type I hoods required to be interlocked with appliances?

Answer: Yes, Section 507.2.1.1 requires the exhaust fan to automatically activate when the cooking operations occur. This can be done with the appliances themselves interlocked with the hood or with a heat sensor.
Note, the performance test required by Section 507.16 requires the operation to be tested.
507.2.1.1 Operation. Type I hood systems shall be designed and installed to automatically activate the exhaust fan whenever cooking operations occur. The activation of the exhaust fan shall occur through an interlock with the cooking appliances, by means of heat sensors or by means of other approved methods.

507.16 Performance test. A performance test shall be conducted upon completion and before final approval of the installation of a ventilation system serving commercial cooking appliances. The test shall verify the rate of exhaust airflow required by Section 507.13, makeup airflow required by Section 508 and

NC Mechanical Code

1st Qtr. 2016 Code Answers in brown (Jan-Mar) 2nd Qtr. 2016 Code Answers in green (Apr- Jun)
3rd Quarter 2016 Code Answers in blue (Jul-Sep) 4th Quarter 2016 Code Answers in red (Oct-Dec)

proper operation as specified in this chapter. The permit holder shall furnish the necessary test equipment and devices required to perform the tests.

600 Chapter 6 Duct Systems

601.2 - Question: I was turned down on plan review for not providing returns in each of the rooms. The notes said corridors could not be used as a return path.

Answer: Section 601.2 prohibits using corridors as supply, return, exhaust, relief or ventilation air paths. Not providing returns in the rooms will force the air to move to the corridor to return back to the HVAC equipment. Rooms such as toilet rooms, bathrooms, dressing rooms etc, that open directly onto the corridor; can use the corridor as a source of makeup air. Note, these type of rooms will have a form of exhaust. Nothing prohibits conditioning the corridor.

601.2 Air movement in egress elements. Corridors shall not serve as supply, return, exhaust, relief or ventilation air ducts.

Exceptions:

1. Use of a corridor as a source of makeup air for exhaust systems in rooms that open directly onto such corridors, including toilet rooms, bathrooms, dressing rooms, smoking lounges and janitor closets, shall be permitted, provided that each such corridor is directly supplied with outdoor air at a rate greater than the rate of makeup air taken from the corridor.

2. Where located within a dwelling unit, the use of corridors for conveying return air shall not be prohibited.

3. Where located within tenant spaces of 1,000 square feet (93 m2) or less in area, use of corridors for conveying return air is permitted.

4. Incidental air movement from pressurized rooms within health care facilities, provided that the corridor is not the primary source of supply or return to the room.

NC Mechanical Code

1st Qtr. 2016 Code Answers in brown (Jan-Mar) 2nd Qtr. 2016 Code Answers in green (Apr- Jun)
3rd Quarter 2016 Code Answers in blue (Jul-Sep) 4th Quarter 2016 Code Answers in red (Oct-Dec)

602.2 - Question: If a building is wood construction, can the above ceiling plenum be constructed of wood? Section 602.2 NCMC states the plenum enclosure shall be constructed of materials permitted for the type of construction.

Answer: We reached out to NCDOI for an interpretation on this. While Section 602.2 did state the plenum enclosure was permitted to be of materials for the type of construction; Section 602.2.1 then stated materials within plenums shall be non-combustible or shall have a flame spread index of not more than 25 and a smoke developed index of not more than 50.
Dan Dittman and NCDOI determined the plenum enclosure cannot be constructed of wood, even if the building is of wood construction. He admits Section 602.2 is written poorly. The updated section in the 2015 IMC is written more clearly and has the same requirements as 602.2.1.
602.2 Construction. Plenum enclosures shall be constructed of materials permitted for the type of construction classification of the building.

700 Chapter 7 Combustion Air

800 Chapter 8 Chimneys & Vents

900 Chapter 9 Specific Appliances

1000 Chapter 10 Boilers & Water Heaters

1100 Chapter 11 Refrigeration

1200 Chapter 12 Hydronic Systems

1300 Chapter 13 Fuel Oil Piping

NC Mechanical Code

1st Qtr. 2016 Code Answers in brown (Jan-Mar) 2nd Qtr. 2016 Code Answers in green (Apr- Jun)
3rd Quarter 2016 Code Answers in blue (Jul-Sep) 4th Quarter 2016 Code Answers in red (Oct-Dec)

1400 Chapter 14 Solar Systems

Policy - Question: Can the corridor wrap around an airhandler so dampers are not required, if the airhandler only serves the corridor?

Answer: Yes, after discussing the issue with Jeff Vernon. The following interpretation was agreed upon:

1. The unit can only serve the corridor.
2. Only the unit serving the corridor can occupy the space.
3. This would not be allowed in an exit passageway.

Policy

Other - Question: What is the policy about using a smoke detector to shut down the airhandler in an apartment?

Answer: This is not a policy, it is an accepted alternate method. The code requires a dynamic damper listed to UL555C. At the time this method was approved, they did not produce a dynamic damper listed to UL555C. This was an alternate that was agreed upon between Mecklenburg County Code Enforcement and NCDOI, that would allow the use of a static damper. The original interpretation is attached.

Other - Question: Can a plumber run the hydronic under floor piping for heating?

Answer: No, This is a heating application and would require the installer to have a H-1 license.

NC Mechanical Code

1st Qtr. 2016 Code Answers in brown (Jan-Mar) 2nd Qtr. 2016 Code Answers in green (Apr- Jun)
3rd Quarter 2016 Code Answers in blue (Jul-Sep) 4th Quarter 2016 Code Answers in red (Oct-Dec)

Manufacturer's Installation Instructions - Question: The clearances for the first 3 feet of ductwork on a furnace, where does this begin? The outlet of the furnace or the A/C coil?

Answer: Unless the manufacturer's installation instructions stated the outlet of the furnace, the 3 feet would begin at the outlet of the coil. It would be considered an extension of the assembly.

Other - Question: Why are Hookah lounges treated as smoking lounges? And why can I not naturally ventilate the space?

Answer: NCMC Section 403.3 reads "…Ventilation rates for occupancies not represented in Table 403.3 shall be those for a listed occupancy classification that is most similar in terms of occupant density, activities and building construction; or shall be determined by an approved engineering analysis…"
Effective Jan 1, 2016, the NCFC added Section 310.9, requiring Hookah Lounges to comply with Section 403.3 NCMC.

See attached

2014 NEC - Question: What are the new access requirements for duct heaters?

Answer: There are new access requirements for duct heaters in the 2014 NEC that go into effect April 1, 2016.
424.66
(B) Limited Access. Where the enclosure is located in a space above a ceiling, all of the following shall apply:
(1) The enclosure shall be accessible through a lay-in type ceiling or an access panel(s).
(2) The width of the working space shall be the width of the enclosure or a minimum of 762 mm (30 in.), whichever is greater.

NC Mechanical Code

1st Qtr. 2016 Code Answers in brown (Jan-Mar) 2nd Qtr. 2016 Code Answers in green (Apr- Jun)
3rd Quarter 2016 Code Answers in blue (Jul-Sep) 4th Quarter 2016 Code Answers in red (Oct-Dec)

(3) All doors or hinged panels shall open to at least 90 degrees.
(4) The space in front of the enclosure shall comply with the depth requirements of Table 110.26(A)(1). A horizontal ceiling T-bar shall be permitted in this space.

Policy - Question: We would like to use Reflectix's bubble duct insulation. It has an R-8 value, would Mecklenburg County accept this?

Answer: After reviewing the product, we would accept it conditionally. The product itself seems very sound. The max temp rating, smoke development, fire spread; it meets all the required standards in section 604.3 NCMC.
The installation requires the use of a spacing material to achieve a .75 inch air space. This spacing material has specific intervals it must be installed at to achieve the R-value. We would require an IBA to inspect this spacing material before it is covered up. Inspecting the spacing material would be an additional inspection outside the normal sequence of inspections.
Attached is the spec sheet for the Reflectix Bubble Duct Insulation.
604.3 Coverings and linings. Coverings and linings, including adhesives when used, shall have a flame spread index not more than 25 and a smoke-developed index not more than 50, when tested in accordance with ASTM E 84 or UL 723, using the specimen preparation and mounting procedures of ASTM E 2231. Duct coverings and linings shall not flame, glow, smolder or smoke when tested in accordance with ASTM C 411 at the temperature to which they are exposed in service. The test temperature shall not fall below 250ºF (121ºC).

Other

Manufacture's Installation Instructions - Question: I am requesting temporary heat, but the manufacture's warranty states the warranty if voided on the equipment if I use it for temporary heat. Can you help me?

NC Mechanical Code

1st Qtr. 2016 Code Answers in brown (Jan-Mar) 2nd Qtr. 2016 Code Answers in green (Apr- Jun)
3rd Quarter 2016 Code Answers in blue (Jul-Sep) 4th Quarter 2016 Code Answers in red (Oct-Dec)

Answer: The temporary heat is a service we provide for qualifying projects. We have no control over the manufacturer and their warranty policies.

Manufacturer's Installation Instructions - Question: Am I required to used screws when assembling B-vent?

Answer: Most manufacturer's prohibit the use of screws on B-Vent, except for the attachment to the appliance. None that we found required screws for the joints; several provided the option to the contractor to use a 1/4 or 3/8 screws. In no case can the inner liner be penetrated. If the contractor decides to use screws, they will need to provide the installation manual for the B-Vent at the time of inspection.

Other - Question: If a hood is removed, can the grease duct be capped off and left in place?

Answer: Yes, If the wrap or shaft is intact, then the duct can be capped off.

Other - Question: I am changing out an 80% furnace in a crawlspace. The existing furnace is vented by a power exhauster on the foundation wall. Can I use the power exhauster to vent the new furnace?

Answer: This will be determined by the manufacturer's installation instructions. Some manufacturers prohibit or place limits (either distance or specific type) on the use of power exhausters.

Other - Question: Is it permissible to route refrigerant or condensate line in a residential elevator shaft? (single family)

NC Mechanical Code

1st Qtr. 2016 Code Answers in brown (Jan-Mar) 2nd Qtr. 2016 Code Answers in green (Apr- Jun)
3rd Quarter 2016 Code Answers in blue (Jul-Sep) 4th Quarter 2016 Code Answers in red (Oct-Dec)

Answer: We cannot find any code that prohibits routing refrigerant or condensate lines in a elevator shaft in a single family home. If the manufacturer of the elevator doesn't prohibit it, then we see no reason it would not be allowed.

NCECC - 503.2.9.3 - Question: I keep hearing about Appendix 5 of the energy code, is it required? If so, when?

Answer: Appendix 5 is a required document HVAC installations at the final on commercial projects.
This document must be completed by a NC licensed design professional. In the event the project does not have a design professional, like for like change out; the contractor is permitted to complete the form.
To give our customers proper notice of this requirement, Mecklenburg County Code Enforcement will require this form for all projects that is permitted on or after July 1, 2016. The form can be given to the inspector at final, or a more preferable method is for it to be upload prior to the final inspection, similar to how hood certifications are handled.
503.2.9.3 System installation statement. A North Carolina licensed design professional shall prepare and sign the Statement of Compliance –HVAC System Installation (Appendix 5). This statement shall be submitted to the code official and the facility owner.

Exception: The HVAC contractor will be allowed to prepare the Statement of Compliance when a building permit is issued for a project without the seal of a licensed design professional as allowed by an exception under NC State Building Administrative Code and Policies: Section 204.3.5.

2015 Residential Code - M1503.4 - Question: Can you now use gravity dampers on makeup air to residential hoods? I heard there was a code change.

Answer: The 2015 International Residential Code changed the language and now allows gravity dampers. After discussing this code change, and taking into

NC Mechanical Code

1st Qtr. 2016 Code Answers in brown (Jan-Mar) 2nd Qtr. 2016 Code Answers in green (Apr- Jun)
3rd Quarter 2016 Code Answers in blue (Jul-Sep) 4th Quarter 2016 Code Answers in red (Oct-Dec)

consideration that the change will be in North Carolina's next code cycle; we have decided to accept this as an alternate method. This change was only in the 2015 IRC, it only applies to one- and two-family homes and townhouses. This will not apply to apartments or condos. If the manufacturer of the hood requires an electric damper, then that requirement will take precedence. The section also requires the dampers to be accessible for inspection, service, repair and replacement.

2015 IRC

M1503.4 Makeup air required. Exhaust hood systems capable of exhausting in excess of 400 cubic feet per minute (0.19 m3 /s) shall be mechanically or naturally provided with makeup air at a rate approximately equal to the exhaust air rate. Such makeup air systems shall be equipped with not less than one damper. Each damper shall be a gravity damper or an electrically operated damper that automatically opens when the exhaust system operates. Dampers shall be accessible for inspection, service, repair and replacement without removing permanent construction or any other ducts not connected to the damper being inspected, serviced, repaired or replaced.